REMARKS

The application has been reviewed in light of the Office Action dated April 14, 2008. Claims 32 and 37-61 were pending, with claims 1-31 and 33-36 having previously been canceled, without prejudice or disclaimer. By this Amendment, claims 32 and 46 have been amended to clarify the claimed subject matter. Accordingly, claims 32 and 37-61 are presented for reconsideration, with claims 32 and 46 being in independent form.

Claims 32 and 37-61 were rejected under 35 U.S.C. §112, first paragraph, as purportedly failing to comply with the written description requirement.

It is apparently contended in the Office Action that the specification does not disclose "defining a plurality of tetrahedrons each being formed by connecting said first line a second line and an additional line connecting said first and second endpoints and additional lines connecting an additional point with said starting point with said first end point and with the second end point."

The Examiner is respectfully referred to the sixth embodiment which is discussed in paragraphs [0185] - [0188] and shown in Figures 22 and 23.

Figure 23 represents the a*b* plane, while Figure 22 represents W and K at different points on the L* plane which represents the third-dimension of a L*a*b* plane, with L* extending outward from the b*a* plane.

Paragraph [0187] is reproduced below in relevant part:

> ".. In the method for obtaining the amount of black for point P, it is first necessary to determine which of the regions divided with a dotted line in Fig.23 should point P be located. For example, in a case where point P is located in a tetrahedron region WG'Y'K, the amount of black is computed according to lines W-K, G'-K, and Y'-K. ..."

Therefore, WG'Y'K forms a tetrahedron region, where the three lines W-K, G'-K, and Y'-K extend outward from the a*b* axis to converge to form the apex of tetrahedron WG'Y'K.

Applicant also notes that paragraph [0187] describes more than one tetrahedron base region, as one of ordinary skill in the art would understand from the statement that it is "necessary to determine ***which one of the regions*** divided with a dotted line in Fig. 23 should point P be located". Further, Figure 23 clearly illustrates a plurality of tetrahedron base regions. A single tetrahedron comprises 4 endpoints: three endpoints forming the triangular base and one endpoint extending outward from the plane formed by the base in the a*b* axis. Paragraph [0187] read in conjunction with the combination of Figure 22 and Figure 23 describes a space containing more than 4 endpoints.

Therefore, the sixth embodiment of the application involves a plurality of tetrahedrons and such tetrahedrons are formed by "connecting said first line and second line and an additional line connecting said first and second endpoints and additional lines connecting an additional point with said starting point with said first end point and with the second end point".

It is also contended in the Office Action that the specification makes no mention of performing interpolation on the identified tetrahedrons.

Paragraph [0185] of the application points out that the difference between the fifth embodiment and the sixth embodiment is the third line (but is otherwise the same). The description of the fifth embodiment (see paragraphs [0167] through [0184]) states that "an amount of black corresponding to a given input color signal can be obtained through interpolation ... Fig.20 shows a method for obtaining the amount of black on an outermost boundary line with respect to an input signal by using interpolation. Fig.21 shows a method for obtaining the amount of black on an internal line by using interpolation." (see paragraph [0179]-

[0180]). Therefore, one skilled in the art would understand the description of the sixth embodiment in paragraph [0187] that "in a case where point P is located in a tetrahedron region WG′Y′K, the amount of black is computed according to lines W-K, G′-K, and Y′-K" by using interpolation (as described in connection with the fifth embodiment).

It is also contended in the Office Action that the specification does not mention performing said interpolation when said input color signal is not substantially within a color range of memory color.

As previously mentioned, the sixth embodiment as discussed in paragraph [0187] is directed toward determining which of a plurality of tetrahedron regions to obtain the amount of black for point P. The Examiner is referred to the description in paragraph [0176] which states that "The third line, in this embodiment, is defined to pass through a color range for reproducing memory color such as human skin color, sky color, and/or plant color." It should be further noted that paragraph [0185] states that "the difference between the fifth embodiment and the sixth embodiment is the third line." Paragraph [0186] explains that "in the sixth embodiment, the third line is defined to be situated between the first line and the second line. That is, in the same manner as the second line, the third line is defined in a same color area as the primary and secondary colors." Therefore, the sixth embodiment is not directed toward having a third line passing through a color range for reproducing memory color, as is the subject matter of the fifth embodiment. States another way, said interpolation is performed in the sixth embodiment if an input color is not substantially within the color range of memory color.

It is further contended in the Office Action that there is no mention of performing interpolation using the tetrahedron if said input color is substantially within said color range of memory color.

Paragraphs [0175] and [0182] describe the fifth embodiment of the present application. Paragraph [0175] mentions that "the third line, in this embodiment, is defined to pass through a color range for reproducing memory color such as human skin color, sky color, and/or plant color," while paragraph [0182] describes that "in a case where point P is allocated at a location proximal to human skin color (a color range for reproducing memory color), the procedure for obtaining an amount of black is...different...." In the scenario when point P is allocated at a location proximal to a color range for reproducing memory, point P is determined to be allocated in one of the tetrahedrons RYS1K, RWS1K, or YWS1K as illustrated in Figure 16 viewed in combination with Figure 17. Figure 17 displays axis L* which extends in an outward direction from the triangular tetrahedron base formed on the a*b* axis in Figure 16. As an example, for the tetrahedron RYS1K, the three lines R-S1, Y-S1, and K-S1 extend outward from the a*b* plane to converge to form the vertex of the tetrahedron, thus forming the three lines described in claims 32 and 46 of the present application. Therefore, the tetrahedrons RYS1K, RWS1K, and YWS1K are formed by a tetrahedron formed by a first line, second line and a third line, and other lines connecting the endpoint of the third line with the endpoint of the second line, and connecting the endpoint of the first line with the endpoint of the third line and with the end point of the second line. Therefore, the tetrahedron RYS1K does include a first line.

The Examiner is further referred to paragraph [0178] which states that "the amount of black for the third line, which passes through a human skin color point, is to be determined more carefully compared to other lines," paragraph [0179] which states that "by determining the amount of black for each line, an amount of black corresponding to a given input color signal can be obtained through interpolation," and paragraph [0180] which describes that "Figure 20 shows a method for obtaining the amount of black on an outermost boundary line with respect to an

input signal by using interpolation and Figure 21 shows a method for obtaining the amount of black on an internal line by using interpolation." Thus, the specification does mention an amount of black for the third line, which passes through a human skin color point obtained through interpolation.

It is also contended in the Office Action that dependent claims 55 and 58 are in conflict with the way the tetrahedrons are being defined in the claims which they depend due because it is contended that the embodiment depicted in Figure 23 also describes shapes interpolated from the embodiment that are not even tetrahedrons, i.e. the "pentahedron" defined by GY'YGK.

It should be noted that the claims of the present application refer to a space **comprising** a single tetrahedron or a plurality of tetrahedrons. The claims do not exclude all other shapes. Thus it is possible for a pentahedron to co-exist in the same space as either a single tetrahedron or a plurality of tetrahedrons without the claims "conflicting."

It is also contended in the Office Action that the sixth embodiment has nothing to do with memory colors and thus are incompatible with the tetrahedrons of the claims from which they depend.

As mentioned above, paragraph [0185] of the application points out that the difference between the fifth embodiment and the sixth embodiment is the third line (but is otherwise the same). The description of the fifth embodiment makes it clear that the subject matter thereof can be intimately associated with memory color.

Withdrawal of the rejection under 35 U.S.C. §112, first paragraph, is requested.

Claims 32, 37-42, 44-51, 53-57, and 59-61 were rejected under 35 U.S.C. §103(a) as purportedly unpatentable over Saito (US 2002/0021458 A1) in view of U.S. Patent No. 5,018,008 to Asada. Claims 43, 52 and 58 were rejected under 35 U.S.C. §103(a) as purportedly

unpatentable over Saito in view of Asada and further in view of U.S. Patent No. 5,930,388 to Murakami.

Saito, as understood by applicant, proposes an approach for using a color reproduction region of an image formation apparatus by creating tables for separating color into color of coloring agent available in the image formation apparatus. Fig. 3 of Saito shows a process for creating ink color separation tables. In such process, after the ink color separation tables are created, interpolation processing is performed. Fig. 5 of Saito shows a process for such interpolation processing.

However, Saito does not differentiate the process to be performed as between (a) when the input color signal is substantially within a color range of memory color and (b) when the input color signal is ***NOT*** substantially within a color range of memory color.

In the claimed subject matter of the present application, ***if an input color signal is NOT substantially within a color range of memory color***, a plurality of tetrahedrons are defined and the one of the tetrahedrons is identified as having the input color signal situated therein and a color material signal is obtained by performing interpolation on the identified tetrahedron, whereas ***if an input color signal is substantially within a color range of memory color***, the image processing method defines one tetrahedron, and obtains a color material signal by interpolation according to the first, second and third lines forming the tetrahedron. Saito does not propose said limitations.

In contrast, in the approach proposed by Saito the same processing is ***always*** performed regardless of whether an input color signal is substantially within a color range of memory color.

Asada, as understood by applicant, proposes an approach for setting color separation wherein an original color image is pre-scanned in order to detect respective color components of

sample pixels and then it is decided whether each sample pixel has color components corresponding to a designated "memory color" within a predetermined allowable error range.

However, the approach proposed by Asada does not involve interpolation with tetrahedrons at all.

Asada does not disclose or suggest, and would not have motivated one skilled in the art to modify the approach of Saito into, an image processing method wherein (a) ***if an input color signal is NOT substantially within a color range of memory color***, a plurality of tetrahedrons are defined and the one of the tetrahedrons is identified as having the input color signal situated therein and a color material signal is obtained by performing interpolation on the identified tetrahedron, and (b) ***if an input color signal is substantially within a color range of memory color***, the image processing method defines one tetrahedron, and obtains a color material signal by interpolation according to the first, second and third lines forming the tetrahedron.

Murakami, as understood by applicant, proposes a color image processing apparatus that includes a first lattice for dividing a color separation signal space in the form of a lattice so as to store in a table of coordinates of lattice points of the color separation signal space thus divided and a second lattice for further dividing a specific unit cube of the lattice in the form of a lattice so as to additionally store in the table coordinates of lattice points of the specific unit cube thus divided (see Murakami, abstract). Murakami also proposes in the case of accurately color-correcting a specified color, e.g. flesh tones, a specific unit cube 11 provided with the RGB signals corresponding to the flesh tones is further divided beforehand if the form of a lattice and the coordinates of each lattice point of the second lattice are additionally stored in the look-up table.

Murakami notes that three-dimensional interpolation can include the cubit interpolation

method, the tetrahedron interpolation method and the prism interpolation method.

However, Murakami also notes that although the tetrahedron interpolation method is the simplest of the three methods, it has a problem in interpolation accuracy compared with the cubic interpolation method and the prism interpolation method due to the fact that as a result of dividing the input color space into a plurality of tetrahedral, a plurality of borders are generated on the divided surfaces of the tetrahedral, thereby causing discontinuity of an interpolation line when it crosses the border surfaces. Instead, Murakami advocates the prism interpolation method wherein a unit cube is divided along its diagonal lines so as to prepare two triangle poles and interpolation values are determined by taking a weighted summation of six output values respectively corresponding to the six lattice points of the prism surrounding the input point and that in the prism interpolation method, conversion accuracy can be obtained by simpler calculation algorithm compared with the cubic interpolation method and the tetrahedron interpolation method.

Stated another way, Murakami teaches away from the claimed subject matter of this application.

As the United States Supreme Court recently reiterated in the KSR case, such teaching away is relevant evidence of nonobviousness and cannot be ignored.

Applicant submits that the cited art, even when considered along with common sense and common knowledge to one skilled in the art, simply does ***NOT*** render unpatentable an image processing method wherein (a) ***if an input color signal is NOT substantially within a color range of memory color***, a plurality of tetrahedrons are defined and the one of the tetrahedrons is identified as having the input color signal situated therein and a color material signal is obtained by performing interpolation on the identified tetrahedron, and (b) ***if an input color signal is***

substantially within a color range of memory color, the image processing method defines one tetrahedron, and obtains a color material signal by interpolation according to the first, second and third lines forming the tetrahedron. None of the cited reference disclose or suggest such an approach wherein the process performed is different as between (a) when the input color signal is substantially within a color range of memory color and (b) when the input color signal is ***NOT*** substantially within a color range of memory color.

Accordingly, applicant respectfully submits that independent claims 32 and 46, and the claims depending therefrom, are patentable over the cited art.

In view of the remarks hereinabove, Applicant submits that the application is now in condition for allowance, and earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Patent Office is hereby authorized to charge any fees that are required in connection with this amendment and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,

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